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UNIVERSITY
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Transforming Education System, Transforming Lives



**INFRASTRUCTURE
AND
MAINTENANCE
POLICY, 2022**



INFRASTRUCTURE AND MAINTENANCE POLICY

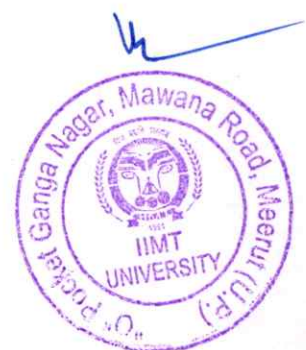


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1. INTRODUCTION

The Maintenance & Engineering department at HIMT UNIVERSITY provides campus wide maintenance services. It is also responsible for the upkeep and upgradation of its buildings, and the estate. Thus, areas like Power, Air-conditioning, Electrical, Plumbing, Carpentry, Civil engineering, and telecommunications fall under its purview. Most of these services are delivered 24 hours a day, 7 days a week and are essential to function efficiently & effectively.

2. PURPOSE

To provide and document the methodology for Maintenance & Service of Air conditioning, Electrical Services, Lifts, Civil works, Plumbing and Calibration of Medical Equipment to ensure that

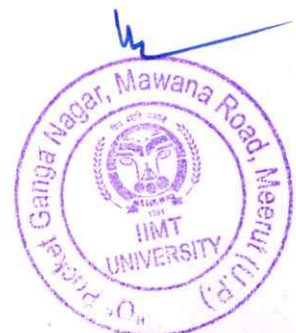
1. Process capability continues to be satisfactory,
2. Required data / records are maintained, and
3. Corrective actions / improvements are initiated.
4. Preventive maintenance is done in all areas of the University to minimize / avoid breakdown of University facilities.

3. SCOPE

The scope of the Engineering department is to ensure surveillance and maintenance of all the equipment. This process document also includes the Telephone exchange.

4. RESPONSIBILITY

Director Engineering and Manager Technical is responsible for the entire functioning of the department



5. ENGINEERING SERVICES

Comprises of

1. Civil Assets
2. Electric Supply
3. Water Supply
4. Air-Conditioning and Refrigeration
5. Intramural Transportation
6. Fire Fighting
7. Engineering Services Department

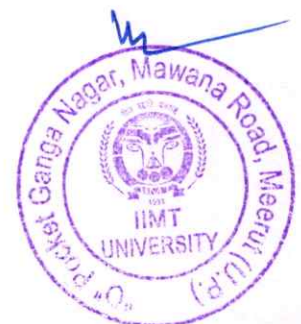
6. JOB DESCRIPTIONS

6.1 Maintenance Head

1. Coordinates with management.
2. Monitors services provided by the department to various places.
3. Prepares preventive maintenance schedule & monitor the implementation.
4. Monitor prescribed data of critical machines for their smooth functioning.
5. Take necessary action for conservation of energy.
6. Prepare annual maintenance budget & ensure that it should not increase without compromising the required necessary maintenance.
7. Acts as a Liaison with Government authority for various related issues; electric & lift inspector.
8. Finalize equipment AMC (annual maintenance contract) preferably CMC

6.2 Supervisor

1. Monitor the services provided by the department to respective places.
2. Daily & weekly Monitoring of work done by plumbers, electricians, lift operators, boiler operators & AC operators.
3. Follows all instructions & works assigned by superiors.
4. Follow-up with all concerned parties regarding AMC of medical equipment, non- medical equipment's & other related problems.
5. Rectifies the equipment problem if possible.



6. Monitors prescribed data of critical machines, record it & inform the concerned party if any problem is observed for their smooth functioning.
7. Supervises all the work done by maintenance people.
8. Attends the call (if necessary) & take required action to rectify.
9. Maintains record of the equipment going out the University for repair.
10. Responsible for the proper working of telephone and intercom network of the University.

6.3 ELECTRICIAN

Daily

1. He will take daily rounds of all University departments, note down all the
2. electrical deficiencies / faults & rectify the same at the earliest
3. Cleaning of power house, D.G. sets & LT panels.
4. Check fan belt & water pump belt.
5. Clean battery & its terminal.
6. Check charging of batteries.
7. Check water & oil level in water tank & oil tank respectively.
8. Prepares a schedule of maintenance in the generator room.
9. Maintains records of faulty electrical appliances.
10. For any spares / item required for repairing / installing any electrical fault he shall give the requisition to the Store In charge.
11. Maintains records of spare items available with him in a stock register.
12. Checks from complaint register regarding pertaining problem status.

Weekly

1. Cleans D.G. sets, L.T. panels, O.C.B panels, meter panel, capacitor panel etc.
2. Checks the water level in D.G. batteries.
3. Checks diesel in service tank.
4. Checks fan belt, water pump belt, capacitor panel, and capacitor reading.
5. checks the working of both D.G. sets daily
6. Checks all electrical points of the floors.



7. Checking of all floor DB as per schedule given

6.4 PLUMBER

Daily

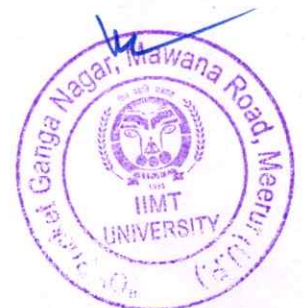
1. Cleans all variety of pumps including supply pump, chlorine pump, fire pump & filtration plant etc.
2. Attends & rectifies related complain.
3. Writes daily works details & show it to seniors.
4. Checks water level in water storage tank.
5. Checks auto system of all pumps.
6. Water treatment policy required
7. Does small maintenance work e.g., fixing of door closer, doorstopper etc. required by various departments.
8. For any spare or consumable required for repairing, installation or any sanitary fault, he gives the requisition to the purchase dept. duly authorized by administrator.
9. Keep a record of faulty sanitary, appliances, fitting etc. & inform the Supervisor

Weekly

1. Clean pump house.
2. Clean fire pumps, jockey pump, filter pump & supply pump.
3. check the auto system & setting of all pumps, their leakage, drive coupling, tighten all nut - bolts of & repair (if required)
4. Clean electric panels/pump/fire pumps & tighten all loose connections.
5. Backwashing of filter tanks.

6.3. Daily

1. Ensure smooth operation of both the lifts.
2. Coordinate with (lift manufacturer company) if any problem is observed.
3. Inform breakdown or malfunctioning to the engineering department
4. Shift the patient, help in shifting of patient in case of lift failure /to rescue the attendants, passengers in case of lift failure.



5. Check whether maintenance services provided by outside agency is as per the schedule.

Weekly

Lift is maintained by (OTIS Limited) under the annual maintenance contract.

1. Clean the lift machines & machine rooms.
2. Clean fan & light.
3. Check lifts rope condition.

7. UTILITY SERVICES PLAN

The Utility Systems Management Plan monitors and evaluates the utility systems in use at IIMT University according to applicable laws and regulations.

7.1. Objective

7.1.1. To provide a reliable Emergency Power system by:

1. Testing the emergency power generators (off load & on load)
2. Performing annual maintenance

7.1.2. To provide and improve patient & Staff Safety by:

1. Maintaining emergency power system
2. Maintaining battery-operated emergency devices
3. Maintaining safe and regular water supply
4. Reducing the potential for organizational-acquired illness

7.1.3. The following systems are included in the Utility Systems Management Program:

1. Electrical Distribution System
2. Emergency Power System
3. Ventilation and Air Conditioning Systems
4. Plumbing and Water Delivery Systems



5. Communication Systems.
6. Fire protection system (Included in Fire management plan).

7.2. Responsibility

The Facility and Engineering in charge is responsible for maintaining the Utility Systems Management Program

7.3. Electrical System:

In IIMT University, supply is fed from transformer there is HT meter installed in transformer room. Three MDB's are in main L.V panel room in three MDB's breakers are motorized. Load shedding arrangement is made through PLC controls.

7.4. PLUMBING AND WATER DELIVERY SYSTEM

Supply of hot and cold water to the University premises is accomplished by employing the following system

- a. Concrete water storage tank
- b. Water transfer pump set
- c. Water softening system
- d. GRP domestic water storage tank
- e. Water booster pump set
- f. Hot water clarifier
- g. Hot water pump set
- h. Hot and cold water piping system

Cold water supply from PHD is stored in the concrete water tank of appropriate capacity; Water from the concrete tank is being pumped by the transfer pump to the GRP domestic water tank after softening the water softener system to suit domestic consumption. Transfer pump operation is controlled by the float switch installed in the concrete water tank as well as the GRP domestic water tank.

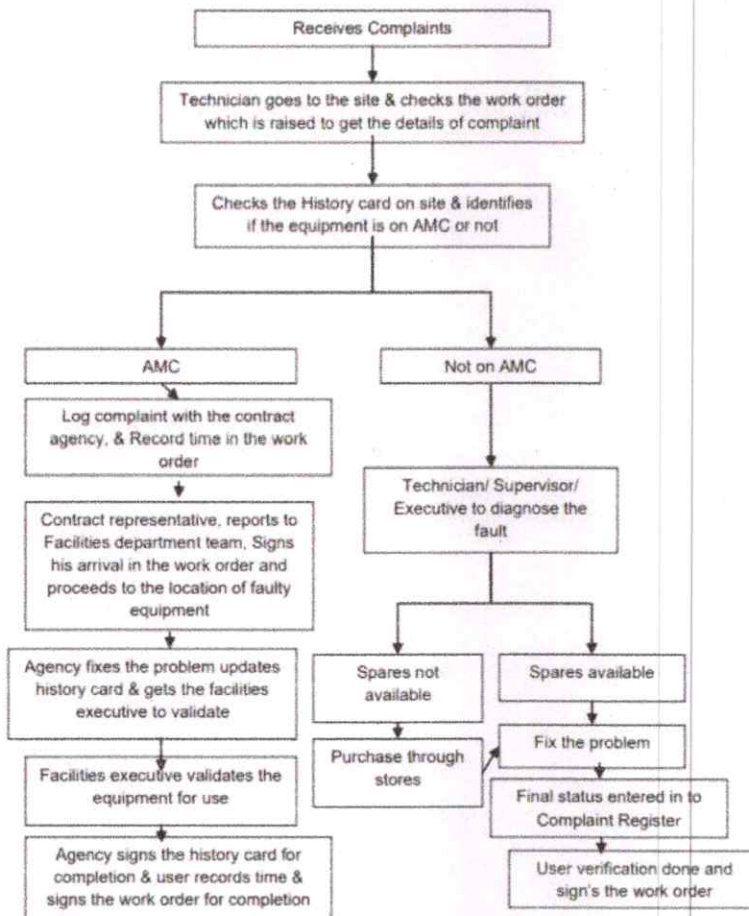
Pressure transmitter installed in the water supply line, senses the demand for cold water supply in the building, up on receiving signal from the pressure transmitter the PLC (programmable logic



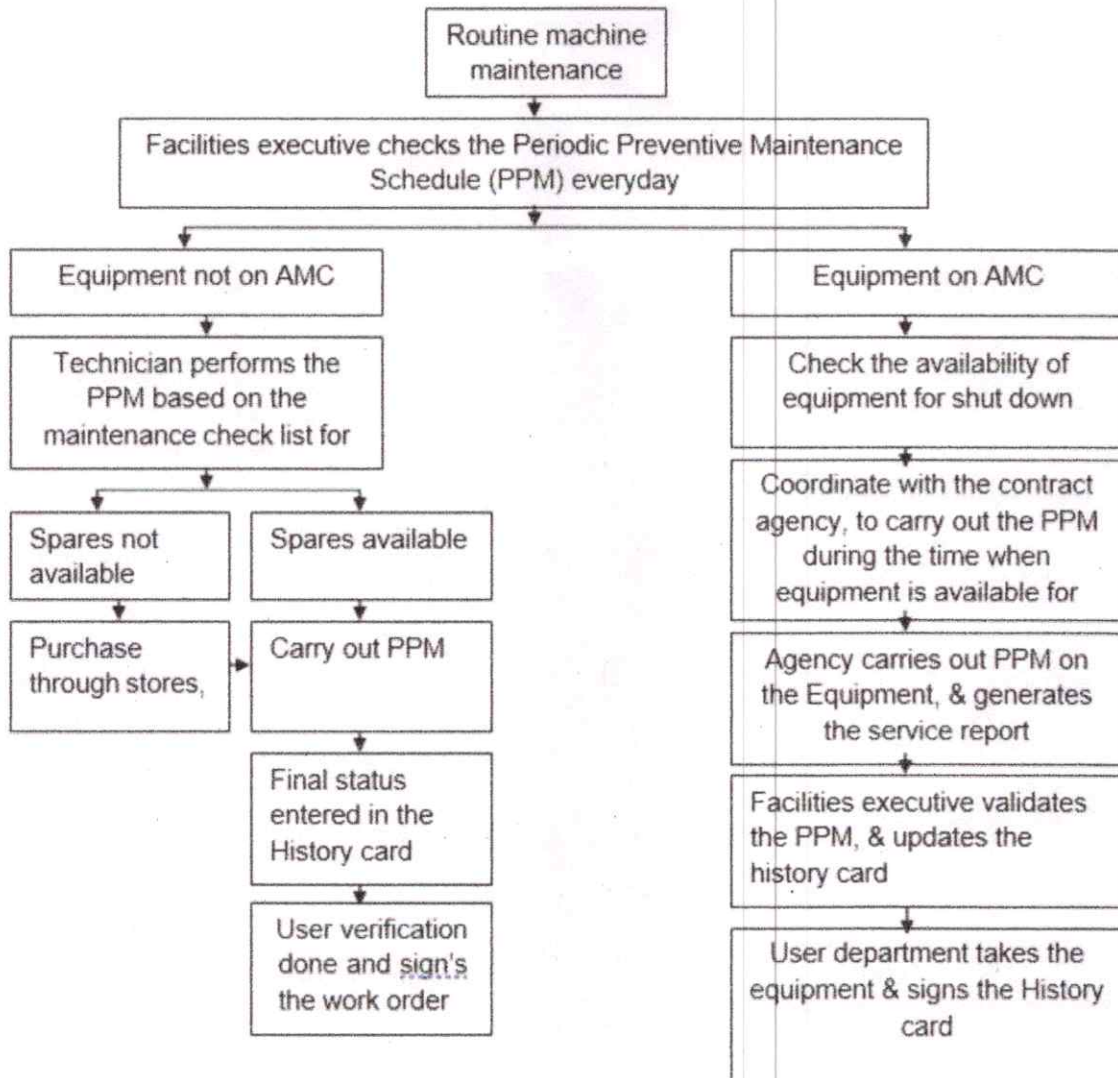
controller) controls the water pump through the VFD(variable frequency drive), thus ensuring that continuous water supply is maintained inside the building.

Both water tanks are on a scheduled cleaning system on half yearly and related equipment also having scheduled maintenance and documentation on monthly.

8. COMPLAINT MANAGEMENT



9. PREVENTIVE MAINTENANCE



9.1. MANUAL SYSTEM

1. Portable fire extinguishers are provided throughout the University and every employee is trained to identify the type of fire and type of fire extinguisher to be used.
2. All these fire extinguishers are serviced regularly and have service card attached to them indicating the date of service.

9.4.1. Types of Fires

1. Class A: Ordinary combustibles such as papers, rags, wood, etc.
2. Class B: Oil, flammable solvents, gasoline, grease, etc.
3. Class C: Electrical fires, energized electrical equipment

9.4.2. Types of Extinguishers

1. Pressurized water - use only on Class A fires
2. Dry chemical - use on Class A, B, or C fires
3. Carbon dioxide - use on Class B or C fires
4. Other systems available
 - a. Hose Reel – at specific locations
 - b. Alarm / warning systems

The alarm system is designed such that when it is activated the alarm on the floor/area will ring and the alarm on the other area will also blink intermittently and ring.

- a. Heat and smoke detectors
- b. Break glass

The break glass is meant for anybody to activate the alarm system. They will be located on all corridors and near the exit doors on each floor



10. REVERSE OSMOSIS PLANT

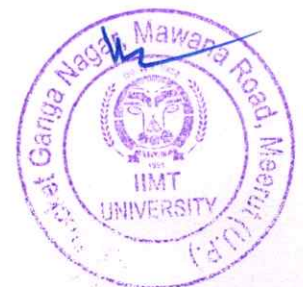
1. The water from the Reverse osmosis plant will be used only for the hemodialysis purpose.
2. The University shall ensure water quality shall comply to 9international norms
3. The treated water shall be stored in the water tank of 2000lts capacity
4. The treated water quantity shall not be less than 1500ltrs at any given part of time in the treated water tank
5. The Engineering service department shall ensure the proper operation of the plant.
6. The shift technician shall check the plant for level of water in raw water tank and treated water tank every shift and enters into the Pump Room Logbook.
7. Daily the facility technician shall check the operation of the plant by checking the pressures and the dosing etc and check the PH every week and record it in the register
8. Any change in the PH is to be informed to the Chief Engineer immediately and noted
9. The total preventive maintenance of the plant will be conducted every six months and is to be entered in the history card
10. The total preventive maintenance is to be performed by trained professional and plant is to be rinsed with copious amount of water
11. The water lines of RO Plant in the University will be flushed the sodium hypochlorite of 1:1000 concentration every month
12. After the rinsing of the line with sodium hypochlorite it is to flushed not less than 30 min of fresh RO water
13. The tank shall be emptied and cleaned every six months and same to be entered in the history card
14. The dialysis technician shall check the PH of the water with the simple Litmus paper every day before starting dialysis session
15. Any problem with the water shall be reported to Chief Engineer immediately by the Hemodialysis technician.
16. The raw water to the RO plant shall be from the treated domestic water supply and raw water tank shall never be less than 3/4 of the tank capacity



17. The microbiologic sampling is to be done by the infection control nurse for and microbiologic contamination and it is to be informed to the engineering service in case of adverse findings
18. Run hours of the RO plant shall be entered in the daily report of the facility
19. The softening plant prior to the RO plant shall be back washed every week by the facility technician
20. Any increase in the TDS up to 20ppm in the treated water shall be informed immediately to Chief Engineer.

11. ENGINEERING DEPARTMENT/SERVICE SAFETY

1. Department head is responsible for maintaining safety standards, developing safety rules, supervising and training personnel in departmental standards.
2. Department Head is responsible for notifying the support service manager in case of any safety hazard.
3. All department employees shall report defective equipment, unsafe conditions, acts or safety hazards to supervisor.
4. Keep electrical cords clear of passageways. Only use electrical extension cords in compliance with policy.
5. All equipment and supplies must be properly stored. Do not store heavy items on top shelves.
6. All personal electric appliances shall be inspected by the Engineering Department for safe use.
7. Scissors, knives, pins, razor blades and other sharp instruments must be safely stored and used. Use of sharp spindles is prohibited.
8. All electric machines with heat producing elements must be turned off when not in use.
9. Smoking is prohibited in the University.
10. Do not permit rubbish to accumulate.
11. Notify Engineering Department immediately of improper illumination and ventilation.
12. Furniture and equipment must be arranged to allow passage and access to exits at all times.
13. Minor spills, i.e., water, will be cleaned by the employee who discovers the spill. This will be done immediately. Major spills will be cleaned by the House keeping Department.



14. Report faulty equipment to Engineering Supervisor or vendor as per policy.
15. Warning signs must be obeyed.
16. File drawers and cabinet doors shall be closed when not in use. Open only one drawer at a time. Evenly distribute material to prevent the file cabinet from being unbalanced and tipping over.
17. Wear suitable clothing (avoid high heels or jewelry that may catch in machinery).
18. Use appropriate personal protective equipment.
19. Keep all hand tools in safe condition. Cutting tools must be kept sharp. Be sure that all tools are clean and free from damage, grease or corrosion. Hammers, screw drivers and similar tools need safe handles. Chisels and similar tools shall be dressed smooth and shall be free from mushroomed heads.
20. Use only non-sparking tools when working around flammable or explosive vapors or gases.
21. Extension cords for power tools shall be checked carefully before using to be sure they are free from defects. Use ground connectors whenever possible.
22. A tool box is the safest way to carry tools and to keep them together on the job.
23. Never use a defective or broken ladder. Report such defects so they can be corrected or the ladders replaced.
24. Do not use step ladders as straight ladders. Be sure that straight ladders have "safety feet." When setting up straight ladder, its base shall stand not more or less than 1/4 the length of ladder from the wall.
25. Never use metal ladders when working on electrical equipment, wiring or changing light bulbs.
26. Protect your feet with safety shoes. Wear safety goggles whenever there is a possibility of foreign bodies flying in your eyes, especially when grinding or chipping. Wear sound barriers when indicated.
27. Always shut off valves or switches when working on steam and hot water pipelines or electrical switches and systems. Warning tags shall also be on such switches or valves so that others will not operate them.
28. Tag out must be used when repairing any machinery.
29. Do not overload circuits under any circumstances. Never fuse too heavily. Electrical work shall be done only by qualified electricians, since poor wiring is one of the principal causes of fire.



30. All necessary safety precautions shall be taken while window cleaning. Inspect your equipment regularly, and make periodic checks of window studs and frames.
31. Make certain that adequate and proper guarding is provided for all machinery in maintenance shops. Never operate equipment when guards have been removed.
32. All lacquers and thinners shall be kept only in approved safety cans and stored in accordance with the State pollution control norms.
33. Respond as promptly as possible to request of any personnel to repair unsafe conditions.
34. Regulate hot water thermostat control so temperature does not exceed 110 degree at tops.
35. Check all wheelchairs regularly from a maintenance and safety stand point.
36. Eliminate accumulations of oily rags which could produce spontaneous combustion. Where they may accumulate provide Underwriters' Laboratories approval metal safety cans.
37. A preventive maintenance chart and periodic check system will prevent many accidents.
38. Handle all tools carefully. Tools damaged from being carelessly piled into drawers or dropped on hard surfaces can cause mishaps.
39. Clean oil or grease from a tool before using it. A tool which slips out of the user's hand is likely to cause an injury.
40. Steady and secure material to be cut, sheared, chiseled or filed to prevent the tool from slipping.
41. Except when using a spoke shave or draw knife, always cut away from the body.
42. Take extreme care in the use of torches and soldering irons to prevent explosions and burns. Always wear protective gear. The soldering iron must be placed so that the hot point cannot come in contact with flammable material or with the body.
43. Keep floors clean and free of sawdust, scraps of wood and other objects which might cause tripping or slipping.
44. Ensure that starting and stopping switches are within immediate reach of the person operating the machine.
45. Do not leave a running machine unattended.
46. Check saws frequently for defects and cracks.
47. Ensure that electrical equipment is effectively grounded.
48. Ensure that the power controls are identified by appropriate labels.
49. Gasoline powered equipment shall be operated in well-ventilated areas.



50. Fuel and flammable gas cylinders are stored separately from oxidizing gas cylinders.
51. Compressed gas cylinders must be chained or secured in the upright position and kept away from heat sources.
52. Understand and practice good body mechanics.
53. Keep to Left when going down corridors. Approach intersections carefully. Be sure traffic on other side is clear when opening swinging doors. Do not push doors open with equipment. Use push panel or door knob.
54. Do not leave equipment standing in traffic lanes. Return equipment to its proper location when not in use.
55. Do not obstruct fire equipment. Know location of firefighting equipment and how to use it. Know evacuation routes and what to do in case of fire.

12. ELECTRICAL SAFTY-PREVENTING OVERLOAD

1. IIMT UNIVERSITY receives power supply from State Electricity Board. In case of any breakdown, in the power supply the University has two generators as an alternate source of power
2. Trip switches are located in each floor to prevent any form of short circuit. The electrician maintains a floor wise consumption record of electricity which is updated on a regular basis by the electrician of the University.
3. A record register of the response time of generators is maintained by the security staff of IIMT UNIVERSITY.
4. The electrician checks the wiring system regularly to locate any fault such as short circuit etc and immediately rectifies the same.
5. The generators are regularly tested by the electrician in order to located any fault in the same, this is done to ensure that there is interruption in power supply. The generators are also under AMC, record of the same is maintained by the clerk in charge.



13. EQUIPMENT PROCUREMENT AND MANAGEMENT POLICY

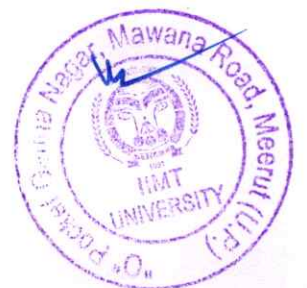
1. A Purchase requisition for purchase of new equipment is forwarded to Purchase committee.
2. A feasibility study is done by the Purchase committee to identify the need for procurement of a new equipment or replacement of existing equipment. The feasibility study includes cost analysis, efficiency, space requirements and merits and demerits in terms of Operations
3. The Purchase committee as per the provision in the purchase guidelines procures the equipment
4. Upon receiving and installation, the equipment is inspected for functioning and specification as mentioned in the Purchase order requirements. Any difference is reported to Purchase committee
5. After being convinced of the conformity of the equipment specifications, the name of the equipment is added in the Equipment Logbook
6. It is ensured that the manufacturer of the equipment imparts appropriate training after installation to the concerned personnel. A certificate of training is also received from the Manufacturer
7. All equipment, electrical devices, are allotted ID no. Identity (ID) number is pasted on the rear side of the equipment. The ID no comprise of an alphanumeric number. The first letter series of the ID no is initials of the University- IIMT UNIVERSITY; the second number denotes floor no. Followed by the name of the equipment (abbreviated acceptable), serial order no in the floor (for that category of the equipment)
8. History Card
 - a. All the Equipment's in the University will have an individual History card
 - b. All the history cards are maintained by the engineering services department and a copy maintained at the user department



- c. These history cards would be updated by the Engineering service team as per the set parameter requirements
- 9. An Equipment Logbook is maintained in the department. The contents of the Logbook are:
 - a. Name of the Equipment
 - b. Model No.
 - c. Brand name
 - d. Serial number as per the Manufacturer
 - e. Equipment ID no as allotted by the department
 - f. Annual Maintenance Contract status/ self-maintenance by the department
 - g. Warranty status with warranty period
 - h. Date of installation
 - i. Location of the Equipment in the University

13.1. Annual Maintenance Contract (AMC)

1. Equipment Annual Maintenance Contract Logbooks is maintained for all equipment's.
2. The Equipment's on AMC are identified and marked in the History card
3. The history card contains the preventive maintenance frequency and calibration requirements and break down maintenance details
4. On the basis of the information gathered on the history card, Periodic Preventive Maintenance (PPM) schedule is made
5. The Facilities executive follows the PPM schedule in conjunctions with the user department on the availability of the machine to conduct the preventive maintenance by the contract agency
6. The facilities supervisor collects and documents the Service report of the maintenance conducted on the equipment by the AMC contractor
7. The break down time is recorded
8. All the spares details are recorded
9. The response time of the AMC contractor is recorded
10. After the Service the Machine is thoroughly tested by the Facilities executive and hands over to the User department.



11. The user department signs the work order request if the service was done on a break down maintenance. The Logbook contains the following
 - a. Name of the Equipment
 - b. Equipment ID number
 - c. Service provider's name
 - d. Contact person
 - e. Address
 - f. Frequency of the service annually
 - g. Tenure of the contract
12. The Contract Period is reviewed and renewed accordingly by the Purchase committee
13. The service provided during the visit by the AMC service provided is documented and filled as Service Reports. The service reports are retained at least till completion of the Contract tenure.
14. Instruction/operating guidelines are provided to all personnel handling the Equipment
15. The frequency and visits of the AMC service provider is monitored. Reminder are sent in case of delay and purchase committee is also informed
16. A Calibration and maintenance schedule of all equipment is prepared if the calibration will have to be done by the Department. The completion of the task is also recorded.
17. Petty Spares Purchase
 - a. Purchase of spares parts is routed through General Stores.
18. Out Going Equipment for Repair and Servicing
 - a. Any equipment found defective will be repaired locally in the plant.
 - b. If the Equipment is not under Annual Maintenance Contract or the nature of the repair is out of the scope of the AMC then, the requisition is raised for repair is raised to the Purchase committee, quotations will be called for and analyzed for issue of contract.
 - c. In case the equipment requires any service at AMC Service provider's premises then, the equipment will be sent for repairs through a gate pass. No equipment can be taken out of the University premises without a gate pass. The gate pass will be signed by the Department manager and ultimately by the Security Officer.
19. Condemnation of equipment
 - a. Any equipment, which outlive its life and requires unusual frequent repairs



- b. Or any equipment which consumes more energy and the version is out dated and hence cannot compete with new version will condemned by the purchase committee after through verification though it has not out lived its life prescribed by the manufacturer.
- c. The Purchase committee decides the Method of condemnation. The Maintenance department forwards the repair status of the Machine to the Purchase committee. This report is studied by the purchase committee and arrives at a conclusion
- d. Options of condemnation
 - i. Scrap: If the equipment is totally Obsolete or repairable and no likely takers then the equipment is sold as scrap
 - ii. Buy back: Such equipment's are replaced by new equipment and returned to the Vendor in replacement of a new equipment at discounted price. The decision for such an option is completely on discretion of the Purchase committee.
 - iii. Sold at discounted price to any taker
 - iv. Condemned Equipment Retained by the department: Some of the equipment's are retained by the department to use its spare parts for future use. However, the machine will be used. Such spares would generally be not available or are expensive otherwise and are still useful.

20. Complaints and Repairs

- 21. The Department functions round the clock. Almost all kinds of repairs can be attended to during night hours
- 22. A Logbook is maintained wherein all call received for complaints or request for repairs are entered. The time of call is also entered. The Department must report the site of repair within 10 minutes of receiving the call.
- 23. The complaint repair is investigated and attended immediately if possible.
- 24. The date and time of attending the call, Nature of repair or complaint, ID no of the equipment and the date and time of completion of repair is entered in the complaint logbook.
- 25. The department maintains a logbook which contains the following
 - a. Some common type of repairs expected.
 - b. Repairs that can be addressed by the department itself or are under AMC.
 - c. The average time for completion of the repair.



26. The Average time of attending to the call site and average time of attending the repair is tally and monitored regularly.
27. Corrective and Preventive actions are taken in case of any deviation.
28. Quality and Monitoring Systems.
 - a. Alternate arrangement of supply of water and electricity are available whenever required. These are tested if the need to utilize them does not arise in past 6 months.
 - b. Cleaning and disinfecting of storage tanks is carried out once in 6 months.
 - c. Water is tested once in two months including microbiology analysis. Appropriate corrective and preventive actions are taken based on the report.
 - d. At least two Firefighting mock drills are conducted in a year to test the efficiency of the system and training of the staff.
 - e. Facility inspection rounds are conducted once in a year to all non-patient care areas and twice a year to all patient-care areas. The observations are documented. A documented copy is forwarded to Organization Safety Committee. Appropriate corrective and Preventive actions are taken. Organization safety committee also studies these actions.
 - f. Appropriate renewal of licenses etc are done with documented reports submitted on time to the licensing authority e.g., Electricity department.
 - g. Electrical Safety Measures are available such earth fitting etc (refer Organization Safety manual).
 - h. The staff of the department is educated about the hazards in the department. The staff is trained to handle and prevent of the hazards. Appropriate Health surveillance is done in a year on all staff. Refer HR manual.
 - i. UPS is available to all critical areas, lifesaving equipments, OT, Laboratory, Dialysis, and Casualty.
 - j. Potable water is supplied for all purpose into OT, and for drinking purpose throughout the University.



14. MAINTENANCE AND CALIBRATION

14.1. Purpose

To provide and document the methodology for maintenance and calibration of non-medical equipment to ensure that

1. Process capability continues to be satisfactory,
2. Required data / records are maintained, and
3. Corrective actions / improvements are initiated.

14.2. Scope

It covers all equipment that is not classified as Biomedical and comes under the jurisdiction of engineering services of the University. This process document also includes the Telephone Exchange.

14.3. Responsibility Maintenance In charge, University Administration

14.4. Quality Objectives

Sl. #	Objectives	Performance Parameters	Measurement Criteria	
			Method	Period
1	Reduce cost of maintenance	Reduce break down	Break down Records	Quarterly
		Standardize the spares	Number	Quarterly
2	Response Time	Time of repair	Days / hours	Quarterly

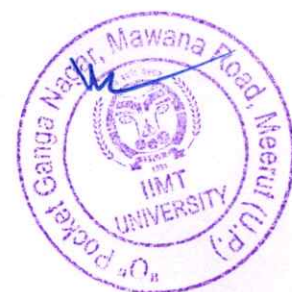


14.5. Description

Sl. #	Activity	Responsibility
1.0	In puts for Maintenance	
1.1	A comprehensive list of Facilities /instruments / devices (wise – containing all different types of instruments / devices used available with details such as I. Their Identification, II. Location, II. Range of Operation, and V. Maintenance & calibration requirements.	Engineer
1.2	The maintenance and calibration requirements are normally identified using the operational & maintenance manuals. Where maintenance manuals are not available, these are based on knowledge and experience. For all new procured instruments / devices, it is ensured that these manuals are controlled through the control of External Origin Documents.	Engineer
1.3	When any instrument / device break down Engineering is informed. Engineering Help desk log the requirement of maintenance / repair in format.	Engineer
2.0	Maintenance Process	
2.1	Preventive Maintenance	
2.1.1	Preventive maintenance schedules are prepared based on manufacturers' recommendations /review of History Card maintained. The intimation of preventive maintenance is communicated in advance to the various departments for release of equipment.	Engineer
2.1.2	The availability of necessary spares, consumables, tools and necessary materials are ensured through standardization and /or advance planning, through Stores and guidance by CE / Engineer -Engineering Department.	Engineer
2.1.3	Preventive maintenance is carried out as per Maintenance Schedule. The concerned engineer checks the maintenance activities regularly.	Engineer
2.1.4	After completion of maintenance (whether preventive or breakdown) the O K report is taken from the user department.	Engineer



2.1.5	All preventive maintenance jobs done are recorded in History Card maintained for each equipment / device (unit wise).	Engineer
2.2	Breakdown Maintenance	
2.2.1	Breakdown of an equipment or device is reported is informed to Bio Medical areas. Bio Medical Engineer logs the requirement of maintenance / repair.	Engineer
2.2.2	After completion of maintenance (whether preventive or breakdown) the O K report is taken from the user department.	Engineer
2.2.3	All preventive maintenance jobs done are recorded in History Card maintained for each equipment / devices.	Engineer
2.2.4	Instruments / devices which are given in AMC (Annual Maintenance Contract) are given to AMC Company for maintenance. A report of failure / break down is taken from company for monitoring purposes.	AMC Company / CE
3.0	Calibration of Devices	
3.1	A list of all instrument /equipment/ devices requiring calibration is prepared and maintained. The list identifies the measurement instruments by name, type, serial number, location, applicable calibration requirements, date of calibration done and calibration due date. The calibration status is updated continuously.	Concerned Engineer
3.2	This list also indicates, whether calibration is done in house or through external sources. Calibration requiring an outside agency - a contract or purchase order is issued.	Concerned Engineer
3.3	Where required Calibration agency is provided with necessary facilities and support to carry out calibration in the University itself.	Concerned Engineer
3.4	Such instruments that are to be calibrated at an outside location are collected and sent to the identified calibration agency.	Concerned Engineer
3.5	The following is checked when calibration is done - <ul style="list-style-type: none"> • Physical condition of instrument /test equipment • Calibration report verification • Calibration certificate to be obtained from calibration agency and after verification marked as O.K. /Not O.K. • Sticking of calibration sticker 	Concerned Engineer
3.6	Calibration history is maintained and calibration certificates filed.	Concerned Engineer
3.7	Maintenance preserves the machine's accuracy and fitness for use. If equipment is out of calibration or is	Concerned Engineer



	otherwise not fit for use, it should be withdrawn from use.	
3.8	Accessories associated with Test instruments are identified and calibrated along with Test Instruments.	Concerned Engineer
3.9	In case an instrument has an error – the materials already checked by this instrument are quarantined. This lot is re-checked with other instruments which are in order/the same instrument after its re-calibration.	Concerned Engineer
3.10	Persons using instruments are trained on aspects like Do's, Don'ts, handling, storage, safety, preventive maintenance and minor repairs as and when required. Records of training imparted are maintained.	Concerned Engineer
3.11	Faulty instruments are re-calibrated when received after repair.	Concerned Engineer
4.0	Maintenance of Telephone & Exchange System	
4.1	Problems of non-working telephone lines, instruments, etc. (internal / external) or paging system is brought to the notice of the engineering department.	Concerned technician / Engineer
4.2	Engineering deputed the responsible technician to find the problem and repair it. Problem telephone sets are replaced immediately.	Concerned technician / Engineer
4.3	Cases where the problem is due to external exchange, these are taken up with the external authorities by chief engineer.	Concerned technician / Engineer
F.	Records Generation	
	Breakdown Slip/ Register Preventive maintenance Schedule / Record History Card List of instruments requiring calibration Calibration Sticker Calibration Reports	

15. Standard Operating Procedure for LT Panel

15.1. Objective:

To provide standard procedure for manual starting

15.2. Policy:

Starting procedure should be done in smooth and safe way.

15.3. Responsibility:

Electrician / Shift Engineer



15.4. Procedures:

1. Verify power supply from transformer / D.G. Set in each phase.
2. Verify that ACB springs are in charged position.
3. Close the breaker from TNC & check for power supply.
4. Check the LT operation instructions as per load conditions.
5. Normal supply running TRI & TR2 on load.
6. When supply fails, DG to be take on load & their auxiliary like cooling tower, TC make up valve also to be on.
7. After restoring the power supply, with 15 to 30 minutes for stability of supply, then change cover load from DG to TR.
8. Ensure after TRI & TR2 taken on load, all capacitor banks to be switched on to maintain the power factor.

Revision Guide: Any change in the system needs review of SOP.

16. Standard Operating Procedure for Ventilation, Exhaust Fan

16.1. Objective:

To establish procedure for functioning of ventilation fan

16.2. Policy:

Ensure smooth functioning of firefighting system.

16.3. Responsibility:

Electrician / Fire man / A C Tech. / Shift Supervisor

16.4. Procedures:

1. Check for power supply, controls & selector switch. (Auto mode)
2. Check the condition of filters, belts & pulleys, fans etc. as a weekly routine.
3. Check control cables for BMS operations as a daily basis.
4. Check building automation systems for alarms as a weekly routine.



5. Check exhaust fans are integrated with fire alarm system through fire panel and BMS as a weekly basis.
6. Start fan and check for proper operation & integration.

Revision Guide: Any change in the system needs review of SOP.

17. Standard Operating Procedure for Chiller Plant

17.1. Objective:

To establish procedure for manual operation of HVAC unit

17.2. Policy:

Ensure safe and smooth manual operation of HVAC unit.

17.3. Responsibility:

AC operator / Shift Supervisor

17.4. Procedures:

If chiller operation requires manual start, shift supervisor will determine which unit will be selected for operation.

1. Check availability of correct power supply i.e. Voltage, PF and frequency.
2. Check all foundations, control valves, gauges for their right position.
3. Start condenser pump at MCC by placing in manual mode.
4. Start primary chill water pump at MCC by placing in manual mode.
5. Place secondary chill water pump package in manual at VFD to enable secondary pump operation.
6. Operate cooling tower fans to maintain proper condenser water return temp. Ensure this by monitoring condenser water return temp.
7. Enter user password at chiller control panel.
8. Select peak demand load at chiller control panel and initiate local start command.
9. Ensure proper starting of system and select desired chilled water temp.



10. Record chiller parameters given in the chiller log book.
11. To stop chiller reverse the starting procedure.

Revision Guide: Any change in the system needs review of SOP.

18. Standard Operating Procedure for Water Treatment Plant

18.1. Objective:

To standardize procedure for operation of water treatment plant to obtain maximum efficiency.

18.2. Policy:

To ensure that plant is operated without trouble and has least break downs.

18.3. Responsibility:

WTP operator / Shift Engineer

18.4. Procedures:

1. Check water level in raw water tank at the time of starting the operation.
2. Check healthy power supply available in the electrical panel in all phase.
3. Start hydro pneumatic pumps on auto mode.
4. Check controls and valve of dual media filters.
5. Start filter feed pumps and check pressure drop in the filters media found packed agitate system with air or back wash the media till media is activated for an adequacy of filtration.
6. Check quality of water from softener.
7. Recharge softener with solution.
8. Start liquid chlorine dosing.
9. Test water for adequacy of Ph. value free chlorination level and softening quality for cooling tower parameters.
10. Record parameters in the log sheet.

Revision Guide: Any change in the system needs review of SOP.



19. Standard Operating Procedure for Emergency: Elevators Failure Handling

19.1. Objective:

To establish a procedure for operation of elevators in case emergency

19.2. Policy:

To provide a smooth rescue operation

19.3. Responsibility:

Lift Technician

19.4. Procedures:

1. In the event of intermitted power, the elevator should automatically restart once supply is restored within 30 seconds.
2. In the event of an extended power outage or if the elevator does not automatically restart emergency contact nos. given in the car for assistance.
3. In the event the passengers are trapped in the elevator and you have communication with them confirm for any injuries through intercom installed in the care and m/c room. Ask for medical help accordingly.
4. If the elevator is at floor level, open the doors by using service keys.
5. If the elevator is not at floor level, then bring it down to nearest floor by using manual release form elevator panel on the car m/c room at terrace and subsequently open the door using service keys.
6. In an event that passengers are trapped in the elevator, communication with them is unavailable and occurred injuries are known follow points 4 & 5 as applicable.
7. Guard placed outside the car will be trained to handle emergency and no panic is created by him or passengers.
8. No one will be allowed to open ear door forcibly, till the car reaches nearest landing.



20. FORMS/ DOCUMENTS/REGISTER

1. Work order request Form
2. 52-week preventive maintenance plan schedule
3. Preventive maintenance monthly checklist
4. Shift technicians Logbook
5. DG Logbook
6. Electricity consumption register
7. Complaint book
8. Water supply logbook
9. Attendance register
10. Rounds register

